

COASTAL FISH & WILDLIFE HABITAT RATING FORM

Name of Area: **Lower Niagara River Rapids**

Designated: **October 15, 1987**

County: **Niagara**

Town(s): **Niagara Falls, Lewiston**

7½' Quadrangle(s): **Niagar Falls, ONT-NY; Lewiston, ONT-NY**

<u>Score</u>	<u>Criterion</u>
40	Ecosystem Rarity (ER) Undeveloped rapids section of a major river, rare in New York State; rarity diminished by flow alterations. Geometric mean: $(25 \times 64)^{1/2}$
0	Species Vulnerability (SV) No endangered, threatened or special concern species reside in the area.
12	Human Use (HU) Recreational fishery of statewide significance, but use limited by inaccessibility. Geometric mean: $(9 \times 16)^{1/2}$
9	Population Level (PL) A major concentration area for wintering gulls and waterfowl in the Great Lakes Plain ecological region.
1.2	Replaceability (R) Irreplaceable.

SIGNIFICANCE VALUE = $[(ER + SV + HU + PL) \times R]$

= **73**

DESIGNATED HABITAT: LOWER NIAGARA RIVER RAPIDS

LOCATION AND DESCRIPTION OF HABITAT:

The Lower Niagara River Rapids are located below Niagara Falls, between the Whirlpool Rapids Bridge and the Lewiston Village line, in the City of Niagara Falls and Town of Lewiston, Niagara County (7.5' Quadrangles: Niagara Falls, Ont.-N.Y.; and Lewiston, Ont.-N.Y.). The fish and wildlife habitat is an approximate four and one-half mile segment of river channel, situated in the Niagara Gorge. This section of the river is very narrow, deep, and fast-flowing, with considerable eddying and crosscurrents. Maximum depths range from 50-160 feet. Average annual flow into the Niagara River is approximately 200,000 cubic feet per second, but much of this is diverted out of the river for municipal and industrial uses. Nearly all of the upper Niagara River flow in excess of that required by international agreement to flow over the Falls (50,000 to 100,000 cubic feet per second) is diverted for hydroelectric power generation in the United States and Canada. This water is returned to the river at the Robert Moses and Sir Adam Beck power plants, located approximately one and one-half miles upstream from the Village of Lewiston. Under existing conditions, these discharges cause the elevation of the lower Niagara River to vary over a range of approximately 3 feet on a normal winter day, and by about 6 feet on a summer day, in the vicinity of the tailraces. The Niagara Gorge is generally characterized by sheer cliffs and steep wooded slopes, rising over 200 feet above the river. Most of this adjacent area is undeveloped parkland, including Whirlpool and Devils Hole State Parks in New York.

FISH AND WILDLIFE VALUES:

The Niagara River Gorge below Niagara Falls is known as one of the great natural wonders of the world. The Lower Niagara River Rapids, which flow through this area, provide habitat conditions that are unusual in New York State's coastal area. However, the importance of this area to fish and wildlife is somewhat limited by the natural physical environment, and by the continuing effects of human activities. The Lower Niagara River Rapids area supports a productive coldwater fishery, focused heavily on spawning runs of steelhead (rainbow trout). These runs start in September or October, may continue sporadically through the winter, and peak in March and April. The concentrations of steelhead that occur in the Lower Niagara River Rapids are among the largest in New York State. Substantial numbers of coho salmon, chinook salmon, and brown trout also occur in the area during spring and fall spawning periods. These populations are the result of an ongoing effort by the NYSDEC to establish a major salmonid fishery in the Great Lakes through stocking; no successful reproduction by salmonids has been documented in the Lower Niagara River Rapids. Until the late 1800's, spawning Atlantic salmon were abundant in the lower Niagara River, upstream to Niagara Falls. Other species found in the lower rapids include smallmouth bass, walleye, white bass, yellow perch, lake trout, and smelt, but relatively little is known about their use of this area. Due to the lack of tributaries between Niagara Falls and Lewiston, the strong turbulent currents, and a general lack of shallow water littoral area, it is unlikely that the Lower River Rapids are utilized for fish spawning or nursery activities to any significant extent. Although a variety of species can be caught in the area, steelhead fishing is the most popular use of this section of the Niagara River. Despite access limitations resulting from steep slopes and turbulent waters, anglers from throughout New York State fish the area from the shore and by boat. Development of the Niagara Falls area, including hydroelectric power projects, generally limits resident wildlife populations in the area to some of the more common species, such as red-tailed hawk, rock dove, downy woodpecker, blue jay, American crow, gray catbird, American robin, common grackle, song sparrow, eastern cottontail, and raccoon. In addition, however, one of the largest winter concentrations of gulls in western New York is found along the Lower Niagara River Rapids, associated with the hydroelectric stations in the gorge. Over 10,000 gulls have been estimated in the area in some years. Herring gulls are the most abundant species, but at least ten others, including several Arctic and European rarities, can be found in the area. Numbers start to build up in October and may reach a peak in November or early December, with a decrease into late December and January. The gulls are apparently attracted to the food provided by the

many live, dead, or injured fish that are entrained in the power plant flow or brought to the surface by turbulent river currents. A variety of waterfowl species also feed in the Lower Niagara River Rapids during migration periods and winter, but concentrations are limited by the lack of resting areas. Diving ducks, such as mergansers, scaup, oldsquaw, and common goldeneye are most numerous in this area. The lower rapids do not freeze over in winter, providing some suitable habitat in any given year. Prior to human settlement of the area, the Niagara Gorge may also have been used by nesting peregrine falcons (E) or bald eagles (E).

IMPACT ASSESSMENT:

A **habitat impairment test** must be met for any activity that is subject to consistency review under federal and State laws, or under applicable local laws contained in an approved local waterfront revitalization program. If the proposed action is subject to consistency review, then the habitat protection policy applies, whether the proposed action is to occur within or outside the designated area.

The specific **habitat impairment test** that must be met is as follows.

In order to protect and preserve a significant habitat, land and water uses or development shall not be undertaken if such actions would:

- destroy the habitat; or,
- significantly impair the viability of a habitat.

Habitat destruction is defined as the loss of fish or wildlife use through direct physical alteration, disturbance, or pollution of a designated area or through the indirect effects of these actions on a designated area. Habitat destruction may be indicated by changes in vegetation, substrate, or hydrology, or increases in runoff, erosion, sedimentation, or pollutants.

Significant impairment is defined as reduction in vital resources (e.g., food, shelter, living space) or change in environmental conditions (e.g., temperature, substrate, salinity) beyond the tolerance range of an organism. Indicators of a significantly impaired habitat focus on ecological alterations and may include but are not limited to reduced carrying capacity, changes in community structure (food chain relationships, species diversity), reduced productivity and/or increased incidence of disease and mortality.

The *tolerance range* of an organism is not defined as the physiological range of conditions beyond which a species will not survive at all, but as the ecological range of conditions that supports the species population or has the potential to support a restored population, where practical. Either the loss of individuals through an increase in emigration or an increase in death rate indicates that the tolerance range of an organism has been exceeded. An abrupt increase in death rate may occur as an environmental factor falls beyond a tolerance limit (a range has both upper and lower limits). Many environmental factors, however, do not have a sharply defined tolerance limit, but produce increasing emigration or death rates with increasing departure from conditions that are optimal for the species.

The range of parameters which should be considered in applying the habitat impairment test include but are not limited to the following:

1. physical parameters such as living space, circulation, flushing rates, tidal amplitude, turbidity, water temperature, depth (including loss of littoral zone), morphology, substrate type, vegetation, structure, erosion and sedimentation rates;

2. biological parameters such as community structure, food chain relationships, species diversity, predator/prey relationships, population size, mortality rates, reproductive rates, meristic features, behavioral patterns and migratory patterns; and,
3. chemical parameters such as dissolved oxygen, carbon dioxide, acidity, dissolved solids, nutrients, organics, salinity, and pollutants (heavy metals, toxics and hazardous materials).

Although not comprehensive, examples of generic activities and impacts which could destroy or significantly impair the habitat are listed below to assist in applying the habitat impairment test to a proposed activity.

The effects of upstream water withdrawals and regulated discharges on the Lower Niagara River Rapids fish and wildlife habitat are not well documented, but represent the most significant potential disturbances of the area. Fluctuating water levels and flow rates may already be adversely affecting fish spawning, such that increased water diversion and use may have a negligible impact on fisheries habitat in this area. On the other hand, power plant discharges in the lower river may be a primary attraction for the large numbers of migratory birds using the area. Any activity that would substantially degrade water quality in the Lower Niagara River Rapids would affect fish and wildlife species using this area. Efforts to improve water quality in the upper and lower Niagara River should continue, including controlling discharges of polluted surface water or ground water from industrial and municipal sources. Spills of oil or other hazardous substances in the river could have very serious consequences for fish and wildlife populations using the area. Thermal discharges, depending on time of year, may have variable effects on use of the area by aquatic species. Barriers to fish migration, whether physical or chemical, would eliminate a major recreational fishery for salmonids. Development of improved fishing access to the area would be desirable, and should have no significant impact on migratory bird populations.